N080-630 ERIC REPORT RESUME

ED 010 067 10-06-66 24 (REV)

EFFECTS OF GEOGRAPHIC MOBILITY ON PERFORMANCE IN HIGH SCHOOL.

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CRP-S-125
- -66
EDRS PRICE MF-$0.09 HC-$1.00 25P.

*FAMILY MOBILITY, *ACADEMIC PERFORMANCE, *FAMILY LIFE, *SOCIAL DEVELOPMENT, *EMOTIONAL ADJUSTMENT, ACHIEVEMENT TESTS, GRADE-POINT AVERAGE, GEOGRAPHIC LOCATION, HIGH SCHOOL STUDENTS, DENVER, COLORADO

THE PRESENT INVESTIGATION HAD A THREEFOLD OBJECTIVE--(1) TO DISCOVER THE EFFECTS OF FREQUENCY AND PATTERN OF FAMILY MOVES ON PUPILS' HIGH SCHOOL ACHIEVEMENT TEST SCORES, (2) TO DISCOVER THE EFFECTS OF FREQUENCY AND PATTERN OF FAMILY MOVES ON THE GRADES PUPILS EARNED IN HIGH SCHOOL, AND (3) TO DISCOVER THE EFFECTS OF FREQUENCY AND PATTERN OF FAMILY MOVES ON PUPILS' PARTICIPATION IN EXTRACURRICULAR ACTIVITIES. HISTORICAL APPROACH WAS CHOSEN FOR THIS INVESTIGATION. STARTING WITH THE END-PRODUCT OF PERFORMANCE DURING THE LAST 2 YEARS OF HIGH SCHOOL, THIS PERFORMANCE WAS TRACED BACK TO DIFFERENCES IN FREQUENCY AND PATTERNS OF PREVIOUS FAMILY MOVES FROM ONE PLACE OF RESIDENCE TO ANOTHER. MOVING BETWEEN COUNTIES AND STATES FROM 1 TO 10 TIMES, IN ANY OF SEVERAL PATTERNS, IS NOT CONSISTENTLY FOLLOWED BY SIGNIFICANT DIFFERENCE IN CHILDREN'S PERFORMANCE IN HIGH SCHOOL EXCEPT IN THE AREA OF STUDENT ACTIVITIES. THERE SEEMS TO BE A SLIGHT TENDENCY TOWARD LESS INVOLVEMENT IN STUDENT GOVERNMENT, CLUBS, SPORTS, AND THE LIKE AMONG STUDENTS WHO HAVE BEEN UPROOTED DURING THE SECONDARY GRADES. AREAS FOR FURTHER STUDY INCLUDE REASONS FOR MOVING, EXPECTATIONS AND THE DEGREE TO WHICH THEY WERE CONFIRMED BY THE NEW PLACE OF RESIDENCE, AND THE AMOUNT OF CULTURAL DIFFERENCE BETWEEN THE OLD SCHOOL AND COMMUNITY AND THE NEW. (JL)

ED010067

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EFFECTS OF GEOGRAPHIC MOBILITY ON PERFORMANCE IN HIGH SCHOOL

Cooperative Research Project No. S-125

by

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University of Denver
Denver, Colorado

1966

The research reported herein was supported by the
Cooperative Research Program of the Office of Education,
U. S. Department of Health, Education, and Welfare

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PROBLEM

A recent report of the U. S. Census Bureau (20) clearly establishes the fact that the American people are becoming more mobile than ever before. Of the more than 182 million citizens past one year of age, over 35 million (19.4 percent) changed residence in 1964. While a majority of these moves were no longer than from one neighborhood to another, over 12 million (6.8 percent) involved a change of county or state. Mobility was slightly greater among people with no children of school age; but a move was still recorded for 17.4 percent of all children from 5 to 17 years of age, and a third of the moves entailed a change of county or state.

Some of the educational implications of all this moving about are quite obvious, or can be inferred from the research literature. Others can only be surmised until firmer knowledge can be developed about relationships between moving and children's adjustments to school. Is the high school performance of children who have moved once or twice more like the performance of those who have moved several times, or more similar to the performance of non-movers? Does it make any difference when the move or moves occurred? Are grade-point-averages more or less affected by moving than subject-matter knowledge? And what is the relationship between changes of residence and participation in clubs, sports, journalism, dramatics, music, and student government?

Better answers to these questions could help school personnel in advising parents who contemplate a move, but are worried about adverse effects on their children's education. The information also

could aid school counselors in determining which, if any, categories of mobile children are likely to require special assistance, and might provide sponsors of sports, clubs, and other activities with focal points for their recruiting efforts.

OBJECTIVES AND HYPOTHESES

The present investigation had a three-fold objective: namely, (1) to discover the effects of frequency and pattern of family moves on pupils' high school achievement test scores, (2) to discover the effects of frequency and pattern of family moves on grades pupils earned in high school, and (3) to discover the effects of frequency and pattern of family moves on pupils' participation in extra-curricular activities after the influences of ability and socio-economic condition have been removed from all three.

The following null hypotheses were advanced:

1. There is no relationship between gross geographic mobility and high school achievement test scores.

2. There is no relationship between patterns of geographic mobility and high school achievement test scores.

3. There is no relationship between gross geographic mobility and grades earned in high school.

4 There is no relationship between patterns of geographic mobility and grades earned in high school.

5 There is no relationship between gross geographic mobility and participation in extra-curricular activities in high school.

6. There is no relationship between patterns of geographic mobility and participation in extra-curricular activities in high school.

7. There are no differences in the performance of boys and girls that can be attributed to mobility.

RELATED RESEARCH

From the research literature of the last thirty years it is clear that moving from place to place can result in impairment of children's family life (7), social development (18), and emotional adjustment (17), but the incidence of these results is obscure, as the writers only had access to the children who encountered difficulties in adapting to their new situations. The earlier studies of relationships between mobility and school achievement (3, 6, 14) tend to give non-mobile children an edge over their migrant classmates, but raise doubts by not considering ability or socio-economic variables which might be confounded with moving. Many studies are confined to the culturally deprived (e.g. 11, 12). Other investigations (e.g. 8) compare migrant children only with one another. Perhaps the most extensive of these is the study of almost 15,000 migrant school children that was conducted by Tetreau and Fuller (19) in 1942, in which they found that being at or above normal grade level depended most on level of father's occupation and the place of birth of the child, some geographic areas outranking others. Number of states previously lived in was inversely related to success in school, but only slightly so, and no clue was provided as to who did the most moving as there was no report of interaction among the three independent variables.

Huus (10) discovered that migrant third and fourth graders earned slightly higher general achievement test scores than did their non-migrant peers, but the opposite was found in grades five through eight. However, the reading scores of the migrant children were slightly higher than those of the natives, and the migrants whose reading scores were in the top third of the distribution had moved oftener than the migrants whose scores were in the bottom third.

The studies that have appeared since the early 1950's have been characterized by tighter control of extraneous variables, and with this tighter control have come hints that some amount of moving from school to school may be harmless, or even beneficial. From the study by Downie (4), it appears that a little moving aroung may increase popularity. He found the sociometric ratings of native fifth to eighth graders, and transfers who had been in the district for three or more years, significantly exceeded the ratings of newcomers of the same levels of intelligence. Within this variance, however, he discovered that children who previously had attended two or three schools were rated significantly higher than both the natives and the migrants who had moved from four to ten times. When the influence of intelligence had been partialled out, Bollenbacher (1) found that there were no significant differences in either reading or arithmetic test scores of the 5,500 sixth graders who had attended the Cincinnati schools all six of those years, four or five of those years, and less than four of those years. With intelligence and socio-economic variables accounted for, Snipes (15) reported that achievement among 443 elementary school pupils on standardized tests of reading, arithmetic reasoning, and English mechanics was related

neither to the number, distance, nor recency of previous moves. But in a later publication (16), he indicated that the rate of advancement through the elementary grades favored the non-movers. Among 438 elementary pupils, who were largely the children of regular Army and Air Force officers stationed in Japan, Farner (5) computed correlation coefficients between mobility and individual achievement test scores. Of the 36 r's (6 tests for each grade from 3 to 8) only 3 were negative, and none significantly so, while 8 were positive at the 5 percent level of significance. The children had moved from 1 to 11 times, and there were no significant differences in intelligence among mobility groups. This, of course, was a favored group in terms of ability, and a group for whom regular moving was an established way of life. Perlman (13) suggests that it may be necessary to look beyond gross incidence of mobility, as it is her contention that the "uprooted child" may be at a greater disadvantage than the child who has moved too frequently to form any deep attachments.

It thus seems apparent that the problem of determining the effects of geographic mobility on performance in school is quite intricate. Good answers to some questions have already been provided, and some excellent clues suggested. But nothing useful has appeared on the relationship between past mobility and present performance at the high school level, nor has performance at this or the lower levels included participation in extra-curricular activities. Patterns of mobility have been ignored by all but two of the studies, and only one thus far has employed an index of socio-economic condition that does more than distinguish extremes.

PROCEDURE

The ideal way to study the effects of geographic mobility on performance in high school would be to set up an experiment in which children would be randomly assigned to mobility groups, moved about at various times and frequencies, and later compared on achievement. As this is impossible, another approach would be a longitudinal case study that would start with a large sample of first-graders and track their progress through school as they moved from place to place, or remained situated in one school district. Every drop-out could be accounted for. Survivors to the senior year of high school could be compared on achievement test scores, but some formidable obstacles would be encountered in trying to compare their grades and extra-curricular participation in high schools whose standards and facilities might vary widely. A practical limitation is the dozen years it would take to collect the data. In light of these considerations, an historical approach was chosen for this investigation. Starting with the end-product of performance during the last two years of high school, this performance was traced back to differences in frequency and patterns of previous family moves from one place of residence to another.

The Sample Population

The pool of students from which the sample population was drawn consisted of all seniors who were enrolled in the seven largest high schools of the Jefferson County R-1 School District, a large and thriving county west of Denver. The large and diversified area that is served by the District insured that the parents of the pupils would be engaged in

a wide variety of occupations, including farming, and would be situated at all points on the economic continuum. The further fact that it is one of the fastest growing areas in Colorado, promised an adequate supply of migrant pupils.

The Student Questionnaire (see Appendix) was administered to all 2,566 seniors enrolled in the seven largest high schools. The two remaining high schools of the District were not included as their comparatively small enrollments curtailed the diversity of student activities. All forms that indicated no father or stepfather living at home were eliminated so as to remove any differential effects of the broken home factor. Next, all students who had not been enrolled in the District since the beginning of their junior year were eliminated on the ground that it would take two years for a transfer student to establish himself well enough to be able to compete with his peers for offices in student government and for position on teams, editorial boards, orchestral chairs, and other student activities. These deliberate exclusions combined with losses for want of one or more standardized test scores to produce a sample of 1,259 subjects.

The Controlled Variables

1. Socio-economic condition. The Index of Social Position developed by Hollingshead and Redlich (9) for their extensive study of social class and mental illness was employed in this study. Each subject's score is based on a composite of three scales--residential, occupational, and educational--whose assigned weights originally were validated on an empirical criterion. To obtain the information needed

for the present study, it was necessary to rank the questionnaire data on father's occupation and education (see Section 2 of Appendix). A far more demanding task was that of estimating the market value of each subject's place of residence. An invaluable aid in this process was Bresser's Directory (2), which lists the prices of all houses sold in the area since 1960.

2. Mental Ability. The measure of mental ability was each subject's Intelligence Quotient on the Lorge-Thorndike, or on the Henman-Nelson test which is used by the District to pick up students who were absent on the day the Lorge-Thorndike test was administered. As the number of subjects who took the Henman-Nelson test was less than 15 percent of the total, no attempt was made to weight the scores for greater comparability.

The Independent Variables

1. Number of Moves. From the answers to Section 3 of the student questionnaire the total number of moves was computed for each student. It should be noted that moves within the District were disregarded in the belief that modern communication and transportation facilities all but eliminate the social discontinuities that formerly attended such moves, and in the observation that in rapidly growing school districts many children who reside in the same dwelling all through their school years are assigned to new and different schools as old school boundaries are redrawn. It, therefore, was assumed that differences among the strictly non-mobile, the reassigned, and the voluntary movers within the District were so negligible that all could

be considered non-mobile, and be contrasted with the children who had moved into the District from other counties and states.

2. Pattern of Moves. When the last move occurred, and whether or not it was preceded by previous moves, was thought to have a possible bearing on high school achievement, especially in view of Perlman's (13) concern over the effects of uprooting children who have established deep and meaningful social relationships. From the student questionnaire, Section 3 (see Appendix), it was simple to ascertain the grade-levels at which moves took place. From this information, the following categories were established:

Group A: No moves

Group B: One or more moves confined to the primary grades

Group C: A solitary move during the intermediate grades

Group D: Last of two or more moves in the intermediate grades

Group E: A solitary move during the secondary grades

Group F: Last of two or more moves in the secondary grades

The original hope had been to split Group B into solitary and multiple move categories, but the total number of cases was insufficient to permit the division.

The Dependent Variables

1. Achievement Test Scores. All of the subtest scores plus the composite score on the Iowa Tests of Educational Development were used.

2. Centile Rank in Class. Raw rank-in-class data were converted into centile ranks in order to achieve comparability between identical ranks in different sized classes.

3. Participation in Extra-Curricular Activities. An Index of School Activities was developed in the following manner: First, a list of all student activities was compiled for each of the seven high schools from what appeared in its 1964 yearbook (or "annual"). Then key personnel at each school were interviewed for a rating of each activity on a three-point scale, in terms of how demanding it was of ability, effort, and time. A fourth point was added for a special position of leadership. Thus, being a reporter or photographer for the school yearbook earned two points at all schools, while feature writing rated three, and serving as managing editor was worth four. Mere membership in the typical non-selective club characteristically rated only one point, though there was noticeable variation from school to school on the status of certain organizations. Values having thus been assigned to all the activities, the 1965 yearbooks were then examined, and scores ranging from 0 to 28 were given to the 1,259 subjects of the study.

FINDINGS

The major statistical treatments of the data were provided in the program for analysis of variance with multiple covariates, adapted from the BMD04V Series by William H. Eichelberger and John L. Horn for use on the Burroughs 5500 computer. Dr. Horn also served as the principal statistical consultant in the analyses.

Number of Moves and Performance in High School

The results of this analysis are summarized in Table 1. From this table it can be seen that composite scores on the Iowa Tests of

Table 1.--RESULTS FROM ANALYSIS OF VARIANCE AND ANALYSIS OF COVARIANCE WITH NUMBER OF MOVES AS THE INDEPENDENT VARIABLE

Dependent Variables	Covariates: Variables Statistically Controlled		Means and Adjusted Means For Different Mobility Groups					F-Values	η
	I.Q.	SEC[2]	0	1	2	3	4+		
ITED[2]			67.12	67.35	69.84	71.30	68.01	1.08	.058
ITED	*		67.53	67.67	69.29	67.91	69.52	0.69	.047
ITED		*	67.64	67.27	69.44	70.06	67.91	0.58	.044
ITED	*	*	67.73	67.62	69.15	67.57	69.40	0.58	.044
Rank in Class[3]			49.63	50.93	53.28	52.40	48.95	0.75	.049
Rank in Class	*		50.01	51.22	52.78	49.27	50.35	0.63	.045
Rank in Class		*	50.13	50.86	52.90	51.21	48.86	0.47	.039
Rank in Class	*	*	50.21	51.17	52.63	48.92	50.22	0.59	.044
Student Activities			6.46	6.64	6.14	6.40	4.78	2.64#	.092
Student Activities	*		6.49	6.67	6.10	6.15	4.89	2.66#	.092
Student Activities		*	6.53	6.63	6.09	6.23	4.77	2.91#	.096
Student Activities	*	*	6.53	6.65	6.0,	6.08	4.86	2.91#	.096

(N=1259)

[1]Composite score on the Iowa Tests of Educational Development
[2]Socio-Economic Condition
[3]Actually a centile rank, the higher values representing better performances
#Significant at the 5% level

Educational Development were unaffected by number of moves, and this result was irrespective of whether or not the effects of intelligence and socio-economic condition were removed. None of the F-values even approached significance.

On the chance that differences might show up by subject-matter area, the same analyses were made of each of the subtest scores on the ITED. The results were almost identical. None of the F-values was significant.

Centile rank in class similarly was unrelated to the number of moves, as can be seen in the middle band of the table.

Depth and frequency of participation in student activities showed a slight relationship to number of moves, both with and without the covariates removed. All four of the F-values slightly exceeded the 2.37 required for the 5 percent level of confidence. But when the correlation ratios are examined in the η (or Eta) column, on the right side of the table, it is evident that the actual magnitude of the differences among mobility groups was quite small. Further inspection of the table reveals that with the covariates removed there was no discernable difference between the non-movers and those who had moved once. But the combined two groups slightly excelled those who had moved two or three times, and a little more noticeably did better than those who had moved four or more times. The latter mobility category included subjects who had moved from four to ten times, no interval of which contained enough cases for statistical treatment as they numbered only 55, 26, 8, 9, 5, 4, and 3 respectively. Individual inspection of these cases revealed that there was a sharp decline of

participation in student activities on the part of the twelve students who had moved from eight to ten times during the first ten grades of school. Seven of the twelve students had scores of 0. The group mean was only 1.3, and only three of the twelve had scores above 1.

Pattern of Moves and Performance in High School

The six mobility patterns that appear in Table 2 represent the following mobility histories:

A = No inter-district moves from grade 1 to grade 11

B = One or more moves confined to the primary grades (1 to 3)

C = One move confined to the intermediate grades (4 to 6)

D = Last of two or more moves in the intermediate grades

E = One move confined to the secondary grades (7 to 10)

F = Last of two or more moves in the secondary grades

The analyses of variance and covariance on the mobility categories revealed no significant difference in ITED scores and class ranks.

Participation in student activities was related to pattern of moves at the 5 percent level of confidence, but the magnitude of the differences among groups was small, as can be seen by examining the last column on the right side of Table 2. Still closer inspection of the table will reveal that a single move which is confined to the elementary school grades has, if anything, a beneficial effect on participation in extra-curricular activities. But when such a move occurs between grades seven to ten, it is accompanied by a decline in participation which approaches that of the high frequency movers in column F.

Table 2.--RESULTS FROM ANALYSIS OF VARIANCE AND ANALYSIS OF COVARIANCE WITH PATTERN OF MOVES AS THE INDEPENDENT VARIABLE

Dependent Variables	Covariates: Variables Statistically Controlled		Means and Adjusted Means For Different Mobility Patterns						F-Values	η
	I.Q.	SEC[2]	A	B	C	D	E	F		
ITED[1]			67.1	70.5	66.5	72.1	67.1	68.5	1.08	.066
ITED	*		67.5	67.1	67.7	70.7	68.8	68.1	0.81	.056
ITED		*	67.7	69.9	66.0	71.2	67.5	67.9	0.87	.058
ITED	*	*	67.7	67.2	67.4	70.4	68.8	67.9	0.67	.057
Rank in Class[3]			49.6	53.7	51.2	54.4	50.5	49.9	0.83	.057
Rank in Class	*		50.0	51.0	52.4	53.1	52.1	50.6	0.65	.051
Rank in Class		*	50.1	53.7	50.8	53.5	50.9	49.3	0.72	.054
Rank In Class	*	*	50.2	51.2	52.1	52.8	52.1	49.4	0.61	.049
Student Activities			6.47	7.17	6.96	6.44	6.08	5.58	2.47#	.098
Student Activities	*		6.49	6.96	7.04	6.34	6.19	5.56	2.41#	.097
Student Activities		*	6.53	7.16	6.90	6.32	6.12	5.50	2.81#	.105
Student Activities	*	*	6.54	6.99	6.98	6.27	6.21	5.50	2.68#	.103

[1]Composite score on the Iowa Tests of Educational Development
[2]Socio-Economic Condition
[3]Actually a centile rank, the higher values representing better performances
#Significant at the 5% level

Sex Differences in Mobility and Performance

Using cumulative ITED score as the dependent variable and pattern of moves as the independent variable, an analysis of variance was computed with sex as a covariate. The resulting F-value was 1.08, which dropped to 0.82 and 0.86 with intelligence and socio-economic condition controlled. None of the three F-values was significant.

To study the interaction between sex and number of moves, ITED cumulative scores, class rank, and participation in student activities, a 5 x 2 factorial analysis of variance was undertaken. After a random throw-out of subjects in order to achieve proportional N's, the sample size was 410. With cumulative ITED score as the dependent variable, the resulting F-value was 0.85. With class rank and student activities as dependent variables, the F-values were 0.96 and 0.59 respectively--far short of the 5 percent level of significance.

CONCLUSIONS AND IMPLICATIONS

Only two of the seven null hypotheses which this study was designed to test could be rejected at a conventional level of significance. The two pertained to student activities.

Apparently moving between counties and states from one to ten times, in any of several patterns, is not consistently followed by significant difference in children's performance in high school, except in the area of student activities. There seems to be a slight tendency toward less involvement in student government, clubs, sports, and the like among students who have been "uprooted" during the secondary grades, and among children who have moved four or more times--especially

those in the eight- to ten-move bracket. But the correlation ratios for these cases indicate that the magnitude of the differences is small.

The question of differential drop-out rates remains unanswered, but the findings of this investigation suggest that differences, if any, might be very small indeed if the effects of broken home, socio-economic status, and intelligence were properly controlled.

Undoubtedly, some children are hurt by being moved around and others are helped. Both the recent literature and the present study suggest that the two groups cancel each other out when only frequency, distance, and pattern of moves are the independent variables. Possibly certain personality types are more or less affected by moving than others. It appears to be a fruitful field for further study. Other promising areas include reasons for moving (such as unemployment, economic betterment, and health), expectations and the degree to which they were confirmed by the new place of residence, and the amount of cultural difference between the old school and community and the new.

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APPENDIX

UNIVERSITY OF DENVER
School of Education Project HRM

STUDENT QUESTIONNAIRE

The purpose of this investigation is to discover whether moving from district to district and from state to state has any effects on students' performance in high school. In order to find out, we are asking several thousand high school seniors to complete this questionnaire. We may find no differences in achievement between students who have remained in one school district and those who have moved around. But if we find any differences--good or bad--we want to be fairly sure that it was the moving around, and not something else, that produced them. This is why we are requesting information on your father's education and field of work.

Instructions: Please answer the following questions as carefully as you can. The answers you provide will be kept confidential. Numbers and percentages will be published, but not in a way that could identify any individual. Your name will not appear in the report.

1. Student Information

NAME: _____, _____, _____
(Last name) (First name) (Middle name)

CHECK ONE: Boy_____ Girl_____ **BIRTH DATE:** _____ **GRADE IN SCHOOL** _____

NAME OF HIGH SCHOOL: _____

HOME ADDRESS: _____, _____
(Number and Street) (Town or City)

2. Father or Stepfather

If you have neither a father nor a stepfather who lives at home with you, put an **X** here_____and move on the Part 3.

NAME OF FATHER OR STEPFATHER: _____

FATHER'S OCCUPATION: (Be as definite as possible. "Works in a factory" does not tell what kind of work he does. "Farmer" is not as good as "farm owner" or "farm worker". "Factory machine operator" would earn an "A" if this were a test; so would "television repairman", "bus driver", "sales clerk", and "electrical engineer".)

_____

NAME OF AGENCY, INSTITUTION, COMPANY, OR STORE AT WHICH FATHER WORKS:
(If father owns and operates a farm or business that has no special name, write: None.)

_____

(OVER)

FATHER'S EDUCATION: (Check one) 6 years or less _____, 7 to 9 years _____, 10 or 11 years _____, graduated from high school _____, attended college _____, graduated from college _____, completed 1 year or more of post-graduate college training _____.

3. Location of Schools Attended

If you started first grade in the Jefferson County School District and have lived there ever since, put an X here _____ and hand in the questionnaire. Otherwise, start with Grade 1. Put your age (at that time) in the second column. Write the name of the city in which the school was located in the third column, and the state in the fourth column. Each move that you made after that should be noted in the same way. If you spent several years in the same location, put new grades and ages in the first two columns and ditto marks (") in the last two columns.

SCHOOL GRADE	YOUR AGE	LOCATION OF SCHOOLS ATTENDED City or Town	State
1			